

IN THE CLAIMS

1. (Original) A mesoporous silica film prepared from a surfactant containing solution, having a dielectric constant less than 3 that has both a relative stability and an absolute stability in a humid atmosphere, a film thickness from about 0.1 μm to about 1.5 μm , and an average pore diameter less than or equal to about 20 nm.
2. (Original) The mesoporous silica film as recited in claim 1, wherein said average pore diameter is less than or equal to about 10 nm.
3. (Original) The mesoporous silica film as recited in claim 1, wherein said thickness has a standard deviation less than $\pm 5\%$.
4. (Original) The mesoporous silica film as recited in claim 1, wherein a porosity of said mesoporous silica film is disordered.
5. (Original) A mesoporous silica film having a thickness from about 0.1 μm to about 1.5 μm and a standard deviation about said thickness, wherein said standard deviation is less than $\pm 5\%$.
6. (Original) The mesoporous silica film as recited in claim 5, wherein a dielectric constant of said mesoporous silica film is less than 3.
7. (Original) The mesoporous silica film as recited in claim 5, having a dielectric constant with a relative stability and an absolute stability.
8. (Original) The mesoporous silica film as recited in claim 5, having an average pore size less than or equal to about 20 nm.
9. (Original) The mesoporous silica film as recited in claim 5, having a porosity that is disordered.
10. (Original) A mesoporous silica film prepared from a surfactant containing solution, comprising a porosity that is disordered, said porosity having an average pore

diameter of less than or equal to about 20 nm, and a film thickness from about 0.1 μm to about 1.5 μm .

11. (Original) The mesoporous silica film as recited in claim 10, having a dielectric constant less than 3, said dielectric constant having both a relative stability and an absolute stability.

12-52 previously cancelled as non-elected claims.

53. (Previously Amended) A mesoporous silica film characterized by:
a disordered porosity, lacking a regular geometric arrangement of pores, and characterized by an x-ray diffraction peak between about 0.75 and about 2 degrees 2-theta;
a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

54. (Previously Amended) A mesoporous silica characterized by:
a disordered porosity as indicated by an absence of an XRD peak in the range from 2 to 6 degrees 2-theta;
a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

55. (Previously Amended) A mesoporous film characterized by:
a dielectric constant less than 3.0 that is stable;
a film thickness from about 0.1 μm to about 1.5 μm ; and
an average pore diameter less than or equal to about 20 nm.

56-65 previously cancelled as non-elected claims.

66. A mesoporous film having a dielectric constant less than 2.5, a film thickness from about 0.2 μm to about 1.5 μm , and an average pore diameter less than or equal to about 5 nm.

67. A mesoporous film having a thickness from about 0.2 μm to about 1.5 μm and a standard deviation about said thickness that is less than +/- 5%.

68. A mesoporous silica film prepared from a surfactant containing solution, having a dielectric constant less than 3 that has both a relative stability and an absolute stability in a humid atmosphere, a film thickness from about 0.1 μm to about 1.5 μm , an average pore diameter less than or equal to about 20 nm, and a porosity that is disordered.

69. The mesoporous silica film as recited in claim 68, wherein disordered is indicated by the absence of an X-ray diffraction peak in the range of about 2 to about 6 degrees 2-theta.

70. The mesoporous silica film as recited in claim 68, wherein disordered porosity is characterized by an X-ray diffraction peak between about 0.75 and about 2 degrees 2-theta.

71-74 previously cancelled as non-elected claims.

75. (Previously Added) A surfactant-templated mesoporous dielectric film on a substrate prepared from a silica precursor solution by evaporation, wherein the film is characterized by disordered porosity.

76. (Previously Added) The dielectric film of claim 71, wherein the silica precursor solution includes one or more of methyl and ethyl groups.

77. (Previously Added) The dielectric film of claim 71, wherein the silica precursor solution includes one or more of alkyl and phenyl groups.

78. (Previously Added) The dielectric film of claim 71, wherein the silica precursor solution includes carbon-containing groups.

79. (Previously Added) A dehydroxylated mesoporous silica film prepared from a surfactant containing silica precursor solution, wherein dehydroxylation of the porous film comprises the following steps:

- a. exposing said porous film to a silane;
- b. removing gas-phase and physisorbed species from said porous film.

80. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 75, wherein steps (a) and (b) are performed at least once.

81. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 75, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a vacuum on said porous film.

82. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 76 wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a vacuum on said porous film.

83. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 75, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a flowing forming gas or inert gas.

84. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 76, wherein said gas-phase species and said physisorbed species are removed from said porous film by applying a flowing forming gas or inert gas.

85. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 75 wherein said surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

86. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 76, wherein said surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

87. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 77, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

88. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 78, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

89. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 79, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.

90. (Previously Added) A dehydroxylated mesoporous silica film as recited in claim 80, wherein the surfactant containing silica precursor solution comprises alkyl-substituted silica precursors.